U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 901 [Rev.] June 1927

Rev. ed. follows

EVERBEARING STRAWBERRIES

STRAWBERRIES may now be had throughout the summer and fall months in the northern United States. Plants of the everbearing sorts may be set in the spring and a crop obtained in the summer and fall of the same year.

The habits of these varieties have led to the development of cultural practices differing in special details from those followed in the production of standard sorts. Such practices are described in this bulletin giving directions for raising the everbearing sorts.

The plants are very hardy, their foliage is very resistant to disease, and under favorable conditions they continue to produce berries until hard frosts occur. These characteristics make them especially suitable for the home garden.

Washington, D.C.

Issued November, 1917.
Issued June, 1927
i.e., revised

EVERBEARING STRAWBERRIES

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DESIRABILITY OF EVERBEARING SORTS OF STRAWBERRIES

MUCH INTEREST has developed in certain varieties of strawberries which bear fruit after the usual season. These so-called "everbearing" sorts produce fruit in early summer and under favorable conditions continue to do so until fall. The term "everbearing" is not entirely satisfactory, but it has been in common use for several years and therefore is used in this bulletin. Heretofore the everbearing varieties have been grown chiefly by amateurs and by commercial growers who have tested them in comparison with ordinary sorts; however, a sufficient number of trials of these varieties has been made to indicate their real value for home use and for market in certain sections of the country.

The two leading varieties of this type of strawberry, the Progressive and the Superb, are notable not only because they produce fruit from the time of the usual crop until late summer or fall, but also because they are exceptionally resistant to leaf-spot diseases. They are also very hardy. The Progressive has been found to withstand the winters of the Middle West better than any other variety except the Dunlap, one of its parents. The Superb also is hardier than most varieties of strawberries. Another remarkable characteristic of these varieties is that if their blooms are killed by frost they soon flower again. Therefore, in sections subject to late spring frosts, which often destroy the crop, these varieties are particularly valuable.

The markedly different behavior of these varieties in the field has led to the development of cultural practices differing in special details from those followed in the production of standard sorts. For this reason the information herein given concerning the origin and characteristics of these varieties has been prepared, and directions for their culture, in so far as these methods differ from those used in growing the varieties which fruit only in the early summer, are also included.

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ORIGIN

The Alpine strawberry, which is indigenous to some parts of the European Alps, has the habit of fruiting continuously from early summer to fall. The fruit of the Alpine strawberry is small, and the horticultural varieties of it under cultivation are used only to extend the strawberry season. Although the Alpine was introduced into cultivation at least 150 years ago, it has never become of commercial importance.

The large-fruited "perpetual-fruiting," "autumn-fruiting," or "four-season" varieties of strawberries of Europe have apparently been derived by long-continued breeding and selection from early summer-fruiting sorts which showed some tendency to the production of flower stems in summer and fall. About 1870 there was introduced in France a variety called l'Inépuisable which flowered throughout the summer but had poor fruit. The first good variety, St. Joseph, was originated by Abbé Thivolet of France in 1893. In 1896 this same breeder originated St. Fiacre, now considered the best everbearer in many parts of Europe. Abbé Thivolet and some other breeders reported the use of the Alpine in originating their everbearing sorts. However, many breeders have not been able to obtain fertile seedlings in crosses with the Alpine and have attributed everbearing characteristics to the abundance of everbearing forms of *Fragaria chiloensis*, one of the parents of the cultivated strawberry in the wild.

No European variety of the everbearing type has yet proved desirable in the United States.

In this country most of the everbearing strawberries have had a very different origin. On September 28, 1898, Samuel Cooper, of western New York, while examining his field of strawberries, noted a plant with several runner plants attached, all of which were bearing blossoms and fruit in all stages of development. The plants among which these were found were of the Bismarck variety, which is reported to be a cross between the Van Deman and the Bubach. Mr. Cooper set apart these plants which were bearing fruit in the fall and named the variety the Pan American.

From the Pan American have been developed the leading everbearing varieties. Mr. Cooper has introduced the Autumn, Productive Superb, Peerless, Onward, Forward, and Advance—all descendants of the Pan American. Of the varieties which have been widely tested to date, the Superb is the most valuable. Figure 1 shows part of a field of this variety on the place where it originated. The value of the Advance, Forward, Onward, and Peerless varieties has not been determined, although the Peerless seems to possess characteristics which may make it more desirable than the Superb.

Harlow Rockhill, of Iowa, also has produced many everbearing varieties, using in his work the Louis Gauthier, one of the European everbearers, the Pan American, and many of the standard varieties which under normal conditions fruit only in early summer. The Americus and the Francis are the result of a cross between the Louis Gauthier and the Pan American. Mr. Rockhill's best-known variety is the Progressive, a cross between the Dunlap and the Pan American. Figure 2 shows part of a field of the Progressive variety on the place

where it originated. Other varieties originated by Mr. Rockhill are the Iowa and the Standpat, both of which are results of crosses between the Pan American and the Dunlap, and the Rockhill, the result of a cross of Progressive and Early Jersey (*Early Jersey Giant*).

Several other persons, including workers at the Minnesota Agricultural Experiment Station, have originated new varieties which fruit during the summer and fall months. These varieties are being tested at the present time to determine their value.

FIG. 1.—A field of strawberries of the Superb variety set in April and grown under the hill system on the place of the originator of the variety at Delevan, N. Y. A crop was picked in the fall of the same year, and another crop was picked the following June. (Photographed June 28)

CHARACTERISTICS AND ADAPTATION

The everbearers are easily confused with other sorts unless certain facts are held clearly in mind. Ordinary early summer varieties may have a long season of fruiting under certain conditions; thus, in central Florida the Missionary variety begins to ripen soon after December 1 and continues to produce berries until after May 1. In the same section the Klondike and some others begin to bear early in February and continue in season with the Missionary. Farther north, however, these varieties produce an early-summer crop only, and that at the regular season. Conditions somewhat similar to those in Florida prevail in some parts of southern Texas.

In southern California ordinary varieties, such as the Brandywine and Excelsior, bear almost continuously under irrigation from early in March until late fall. The Brandywine produces one crop, and, after a short rest period, a second crop, and later a third crop.

The Excelsior and Melinda (*Molinda*), however, bear almost continuously from April to November in that section. Farther north on the Pacific coast the length of the fruiting season of all varieties is shorter, and in Oregon, Washington, and Idaho usually one crop only is harvested. Even in those States certain varieties when given a rest period after producing the early-summer crop and then irrigated will produce a second crop in the fall.

In the eastern United States there is no definitely dry period, so that the plants do not have a real rest or dormant period after the harvest season. Under these conditions a second crop is seldom obtained from the ordinary varieties. Occasionally, however, a prolonged drought followed by rains may furnish conditions favorable for a second crop. Thus, in 1914 a grower at Harriman, Tenn., harvested a second crop of the Wallace (*3–W*) variety. In Kentucky the Early Hathaway (*Texas*) exhibits a slight tendency to bear in late summer whether the season has been dry or not. In Wisconsin

FIG. 2.—A field of Progressive strawberries on the place where the variety originated at Conrad, Iowa. (Photographed Sept. 22)

the Warfield occasionally has produced good fruit in the fall, and the Dunlap at various times has produced a small second crop.

The everbearing sorts, however, differ from all of the above-mentioned varieties in bearing fruit in the northern United States under favorable conditions continuously from the season of the ordinary varieties until frost. The quantity of fruit obtained during this period varies with climatic conditions, with the cultivation, and with the variety. The quantity of fruit borne by the plants at the different periods of the year also varies.

Plants of the everbearing type which have been set for a year bear a fair crop at the time the usual crop is borne. For the period immediately after this early-summer crop, the quantity of fruit produced is small. In August, September, and October it becomes larger, and under favorable conditions the late-summer and fall crop from certain varieties may equal or exceed the early-summer crop. Thus, instead of a constant supply throughout the season, there is a distinct early-summer crop, then a period of comparative

rest when little fruit is produced, followed by a long period when a fairly uniform quantity is borne.

Weather conditions play an important part in the quantity of fruit produced during the summer and fall. Only when the moisture supply and other climatic conditions are favorable can the yield be constant. For this reason the results obtained from the varieties of this type of strawberry have varied greatly in the different sections of the country and in different years. If a long drought occurs while the plants are fruiting, the berries become small and the plants finally cease to bear. Therefore, they are not well adapted to sections having long droughts, unless irrigation is supplied.

Other climatic conditions also influence the yield of everbearing strawberries. As all the varieties of this type have originated in northern States, where the summer heat is not great and where the rainfall is comparatively uniform throughout the year, they are best adapted to such conditions. In southern regions, where the Klondike and Missionary varieties are grown, the everbearing varieties have not yet proved well adapted. The Dunlap is grown commercially north of the regions where the Klondike and Missionary succeed, and it is in regions where the Dunlap succeeds that the everbearers are known to be adapted. These regions extend south to the northern parts of Virginia, Kentucky, Arkansas, and Kansas. South of these limits there are probably points where they may be grown with some degree of success, but they are not definitely known to succeed there at the present time.

In Oregon and Washington, the Superb, Americus, and Progressive have been grown successfully. In Idaho, where late spring frosts occur, the Superb has proved especially valuable, for when frosts have killed the bloom on varieties which fruit only in early summer, these will not ordinarily send out new flower stems until the following year, while the Superb will send out new flower and fruit stems immediately and produce a full crop.

Few reports of the value of these varieties in California are available, but nothing seems to be gained by planting them, as most of the ordinary sorts fruit there throughout the summer.

SOILS

Growers of the Progressive and Americus varieties agree that a more fertile soil is required for them than for the ordinary sorts. The berries of both of these varieties are rather small, and a fertile soil is needed to increase their size. Another reason for their need of a fertile soil is that all the everbearers require a larger supply of moisture than do the sorts which produce only plants after the early-summer crop of fruit. A slight deficiency in the moisture supply seriously affects the size and quality of the berries, but does not noticeably affect plants producing runners only. A soil classed as very fertile contains a large proportion of humus, and one important effect of a large humus supply is to increase the moisture-holding capacity of the soil. Any soil, therefore, containing large amounts of humus, or to which humus has been added by turning under green-manure crops or by the application of stable manure, will be better able to supply sufficient moisture, and one especially well supplied with humus should be selected.

The Superb and other varieties having similar characteristics, however, should be grown on a soil which is rather low in nitrogen. (For descriptions, see the section on "Varieties," pages 12 to 14.) In soils that are too rich, varieties of the Superb type bear a good crop in the early summer and then make a rank growth of leaves and runners throughout the rest of the growing season, just as do the ordinary early-summer sorts. Under such conditions, little fruit will be obtained in the summer and fall. For the best results, these varieties should be grown on a soil in which the supply of nitrogen is somewhat deficient for ordinary vegetable and fruit crops. The soil, however, should furnish an ample supply of moisture throughout the season, or water should be supplied by irrigation. This peculiar soil requirement of the Superb—that is, a soil somewhat lacking in nitrogen, but furnishing a good supply of moisture—is one reason why it has not been as popular as the Progressive in some sections of the United States. On the other hand, the irrigated sections of the Northwest are especially well adapted to the Superb, as many of the soil types are low in nitrogen.

FERTILIZERS

Since the Superb and other varieties of its type should be grown on soil somewhat low in nitrogen, fertilizers containing nitrogen should not be applied ordinarily to plantations of these varieties. If fertilizer is applied, it should contain only phosphoric acid and potash.

The Progressive and Americus need fertile soils, and stable manure usually can be applied with profit to plantations of these varieties. As much as 20 tons per acre may be used with good results, and some growers use even larger quantities. It will be found most satisfactory to apply the stable manure to the land the year previous to that in which the strawberries are set. Weed seeds in the stable manure can then germinate and be destroyed, while if the stable manure is applied directly to the plantation the cost of eradicating the weeds will often be considerable. Commercial fertilizers are rarely used with these varieties.

TIME OF PLANTING

Plants of the everbearing type should be set at the same time as those of other varieties. The yield of fruit the first year, however, depends to some extent upon the time of setting. If the plants are set as soon as the ground is in condition in the spring, a larger crop will be produced than if they are set later. The plants also have opportunity to become established and to develop better root systems before fruiting. If they are set rather late in the season they show less tendency to make runners than when set early.

PLANTING SYSTEMS

The everbearers are grown under the matted-row and the hill systems of culture, and growers have been very successful with each. Under the hill system only the plants originally set are kept for fruit-

ing, no runner plants being allowed to develop. Under the matted-row system, however, runner plants are allowed to root and to form beds varying in width from a few inches to 3 or 4 feet. Larger crops of the everbearers probably can be obtained the first year under the hill system than under the matted-row system. The cost of raising them, however, will be greater, as a much larger number of plants are set than under the matted-row system.

One of the most important factors in determining which system is to be used is the fruiting habit of the variety selected. Thus, the Americus, Francis, Standpat, and Progressive varieties fruit on the runner plants almost as soon as the runners take root, whereas the runner plants of other varieties bear very little fruit or none at all before the following year. During the first year, from a certain number of plants to start with, the varieties mentioned above usually

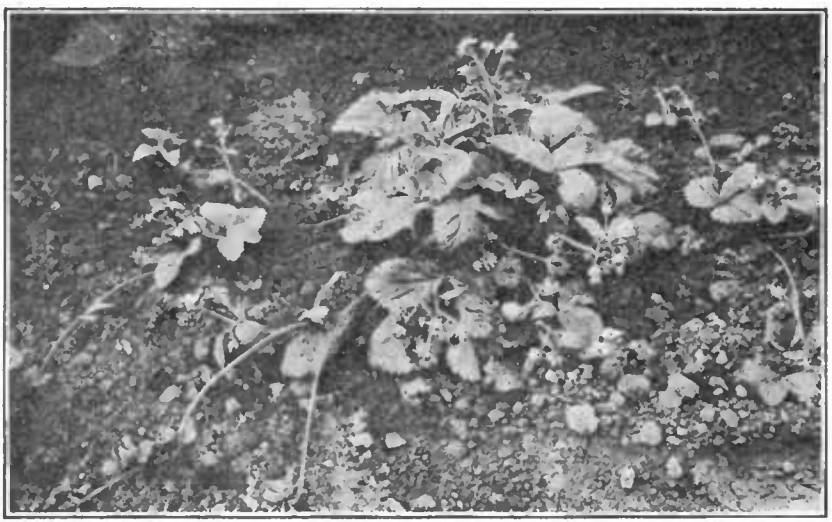

FIG. 3.—A strawberry plant at Osage, Iowa, set in the spring, having runner plants in bloom in midsummer. (Photographed July 13)

will produce larger crops if they are allowed to form runner plants freely than if kept in hills. Figure 3 shows a plant set in the early spring which has runner plants with bloom and young fruit. The Superb, Peerless, Autumn, and others bear more during the first year if not allowed to make runners than if runners are allowed to form.

The plant-making ability of a variety, however, should be considered before deciding upon the system to be used. The Americus, Autumn, Francis, Pan American, Productive, and Standpat do not make runner plants as freely as the Progressive, Superb, and certain others; and thus are better adapted to hill culture.

In ordinary practice, therefore, the Progressive should be grown under the matted-row system and the other varieties under the hill system, except, however, in sections where the Superb and others of its type are kept for a spring crop.

DISTANCE OF PLANTING

Under the matted-row system the plants should be set at the same distance as ordinary varieties, such as the Dunlap, Gandy, and Glen Mary—that is, from 18 to 36 inches apart, in rows which are 3½ to 4 feet apart. When set 2 by 4 feet, 5,445 plants will be required to plant an acre. About 50 plants, enough to set a square rod, should supply a small family with berries throughout the season.

Under the hill system the plants should be set the same distance as are the ordinary varieties. If set 18 inches apart, in rows 3 feet apart, 9,680 plants per acre will be needed; if 18 inches apart, in double rows, in which the single rows are 18 inches apart and the

FIG. 4.—A field of Progressive strawberries grown in double rows under the hill system at St. Joseph, Mo. All runners are removed as they appear. (Photographed July 15)

double rows 4 feet from center to center, 14,520 plants per acre will be required. Figure 1 shows a field of the Superb planted under the hill system in single rows; Figure 4 shows a field of the Progressive variety set under the same system but planted in double rows.

REMOVING BLOSSOMS AND RUNNERS

Flower stems begin to appear soon after the plants are set. Unless the plants are well established, these flower stems are a severe drain on the vigor of the plants and very little good fruit will be obtained from them. For this reason all flower stems which appear before the plant is thoroughly established should ordinarily be removed. If, however, growing conditions are favorable, the plants may become

established very quickly and the removal of the flower stems will not be necessary. Figure 5 shows a young plant so thoroughly established that the flower stem need not be removed. When growing conditions are not favorable the flower stems should be kept picked off until into July. Berries begin to ripen about a month after the flower stems are allowed to develop fruit, and continue to ripen until freezing weather occurs.

The removal of the flower stems does not cause the everbearers to revert to the early-summer fruiting type. The plants will make a more vigorous growth of leaves and runners when the flower stems are removed, sometimes making less fruit than if the stems had been left on. This, however, does not mean that they are reverting, but that for a time they are making plant growth at the expense of fruit.

The following spring, if the plantation is continued, a fair to large crop of berries, depending on the variety, may be expected at the usual fruiting season, and after a period of two weeks to a month, in

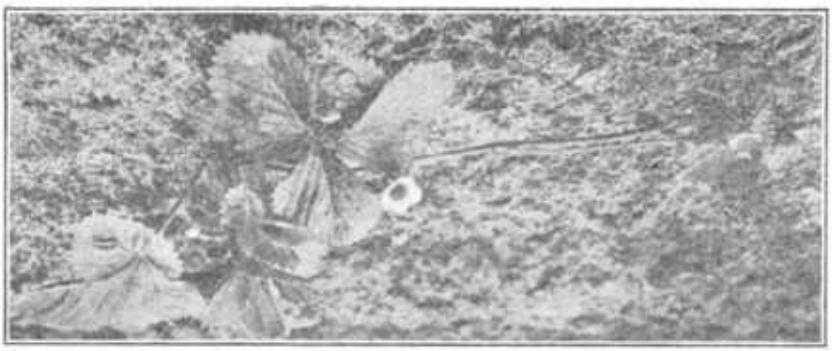

FIG. 5.—A strawberry plant of the Progressive variety set in the spring at Bridgman, Mich., which at the end of June shows a runner and a flower stem and is so thoroughly established that the flower stem need not be removed. (Photographed June 30)

which comparatively little fruit is picked, the plants will begin to bear again. It will prove costly to pick off the flower stems during the spring of the second year, but where it is desired to get as much fruit as possible after the ordinary varieties are gone the flower stems should be removed until about the time the ordinary varieties begin to ripen. If berries are then allowed to develop, they will be ready to pick in about four weeks.

In practice, growers using the hill system commonly remove the flower stems the first year only, and those using the matted-row system rarely remove them, considering the expense too great.

Those growing the everbearers under the hill system also cut off all runners as they appear. This conserves the vigor of the plants, making them larger and more productive than those sending out runners. Some growers use a knife to cut the runners; others a hoe. Some of the runners may be removed at the time of each cultivation by attaching a runner cutter to the cultivator. When this is done it will be necessary to remove the remainder with a hoe.

TILLAGE

Tillage should be very thorough, even more thorough than for the varieties that fruit in early summer, and unless a mulch is used should be continued from early spring until late autumn. In periods of drought the cultivator should be used as often as once a week, for without an adequate and constant moisture supply a large crop of fruit can not be matured. Tillage should be shallow, especially near the plants, so as not to injure the root system or loosen the plants in the ground. A cultivator with many small teeth is best adapted to such use. The outer teeth of the cultivator which run next to the rows should be shortened so that they will not disturb the roots.

MULCHING

When planted on some types of soil the berries are likely to become gritty if the tillage is continued through the fruiting season. To keep them clean, many growers use a mulch of grass, swamp hay, or straw, applying it at the beginning of the fruiting season. To fields grown under the hill system a heavy mulch may be applied. It will assist in keeping down weeds, in preventing the runners from rooting, and in conserving moisture. If a mulch is used on fields grown under the matted-row system it should be light, as a heavy mulch prevents many of the runners from taking root.

DURATION OF A PLANTATION

Those who grow the Progressive variety usually consider it best to set the plants early in the spring, pick a crop of fruit through the summer and autumn, and then discontinue the plantation, thus making the strawberry an annual crop from which the fruit is obtained entirely in months outside the usual strawberry season. Those who wish some fruit for the table may leave the plantation until after the fruiting season of the following summer before plowing it up.

The berries produced on the 1-year-old plants, however, will be small compared with the common sorts, and will be smaller than the fruit of the Progressive variety produced in the summer and fall of the first year. Figure 4 shows a field of the Progressive strawberry several years old. Fruit from this was comparatively small, although very large quantities of stable manure had been applied annually and the bed irrigated at frequent intervals.

The Superb and varieties similar to it, under favorable conditions, bear a fair crop of good-sized berries in the summer and fall of the year they are set. At the ordinary season the following spring they yield a large crop of fair-sized berries, which under favorable conditions will be as large as those produced by the common sorts. For this reason, varieties of the Superb type are much better adapted for use where the same plantation is to be maintained for several years than are varieties of the Progressive type. Figure 1 shows a field of Superb strawberries that had produced a crop in the summer and fall of one year and another crop in June of the following year. This plantation was also allowed to fruit during the summer and fall of the second year.

The duration of the plantation, therefore, will depend largely upon the variety used, but to some extent also upon the planting system and the climatic conditions in the section in which the plantation is made. If the Progressive variety and others of its type are used, it will ordinarily be best to set a new plantation each spring.

If the Superb variety or others of its type are used, the plantation should be maintained according to the practice usually followed with varieties fruiting only in the early summer.

HARVESTING

The harvesting of everbearing strawberries is similar to that of ordinary sorts, although more costly, as the fruit ripens through a long period and not as much is obtained at one picking. The berries of some varieties of everbearers are of excellent quality, and, as they ripen in warm weather out of the usual season and bring a good price, should be carefully picked and packed in attractive packages. In the warmer part of the summer the berries will be soft and very difficult to market in good condition. Particular attention to careful handling will therefore be necessary.

In late fall when the weather is cool, the berries lose the high quality which they possess earlier in the season. Some berries may ripen even after hard frost, but such berries will not be of very high quality. The varieties differ greatly, however, in this respect, the Progressive remaining good in quality until cold weather, while the Superb has little flavor after cool weather begins.

YIELDS

The yields will vary with the climate, the soil, the variety, and the attention given to culture. Up to the present time, everbearers have been grown chiefly by those using intensive methods of culture. Such methods increase the yields. The available records of yields are from the fields of those who not only use intensive methods but who have been successful, and the records, therefore, do not represent average yields. These records, however, show that throughout the northern United States, when set in early spring, the Progressive plants will begin bearing in July and will continue until hard frost occurs, provided moisture and other conditions are favorable. Under the best conditions, as much fruit can be obtained in the summer and fall of the first year as from ordinary varieties in early summer. To get such results, however, water must be supplied in periods of drought and other conditions must be favorable.

In sections east of the Rocky Mountains the Superb and others of its type will not yield as high as the Progressive, and are not generally as desirable for the summer and fall crop. When all conditions are favorable, more than 1,000 quarts per acre may be obtained during this period. In the irrigated sections of Idaho, Oregon, and Washington the yields in late summer and in fall will be much larger, as the conditions in those States seem to be more favorable for this variety. The early-summer crop of the Superb ordinarily will be much larger and the berries much better than those of the Progressive; in fact, some growers have found the early-summer crop of the Superb as large as that of many of the common sorts.

VARIETIES

The principal varieties of everbearing strawberries in the trade at present are Americus, Duluth, Mastodon, Progressive, and Superb.

Only two of the varieties introduced, the Progressive and the Superb, have been widely grown as yet. The Americus, Duluth, and Mastodon are grown to a slight extent and the others very little. The Duluth has been widely tested in Minnesota and is grown to a slight extent in that and surrounding States.

These varieties have been selected by strawberry breeders from large numbers of seedling plants as being best adapted to commercial purposes. When plants are raised from seed, some show no sign of bearing fruit at any but the ordinary season; other plants begin to fruit within three months from the time the seed germinates, and fruit so heavily that no new plants are produced; while still others show sufficient vigor to produce both fruit and young plants. The varieties introduced likewise show great variation in their fruiting

FIG. 6.—Strawberry plants of the Duluth variety at Excelsior, Minn. The plant at the left, producing much fruit, has no runner plants; the one at the right is producing a small crop of fruit and many runner plants. (Photographed Sept. 26)

and plant-making habits. Moreover, the balance between the fruiting and plant-producing habits of many of the varieties is so even that frequently some plants fruit so heavily that no runner plants are made; other plants produce both fruit and runners; while still others may produce no fruit. This is especially noticeable if the plants are set late. Figure 6 shows a plant bearing a heavy crop of fruit but no runners, and another plant producing some fruit and many new plants. Figure 7 shows two plants which have made no runner plants, one having a heavy crop of fruit, the other none. The plants in these illustrations were set rather late, and their difference in behavior is probably due somewhat to this cause.

Many other varieties are in the hands of breeders and will be introduced as soon as a sufficient stock has been propagated. Some of them have been originated by men who have had long experience in strawberry growing and no doubt will be of great value. In addition, these breeders have many thousands of seedling plants of everbearers, from which many desirable varieties may be expected to appear. To

replace present varieties, the seedlings should possess a high degree of resistance to leaf-spot disease, exceptional vigor and hardiness, and good quality, in addition to fruiting in summer and autumn.

Brief characteristics of some of the varieties in the trade at present are given here. Most of them have been placed in two classes: (1) Those with fruiting habits somewhat similar to the Superb, and (2) those with habits more like the Progressive. Those originated by Samuel Cooper are more like the Superb, while those originated by Harlow Rockhill have fruiting habits resembling the Progressive or Americus. Except when otherwise noted, the varieties are perfect flowered and may be set alone.

Americus.—Plants vigorous, deep rooted, forming many runner plants on sandy soils; foliage rather sparse, exposing the berries somewhat; fruiting stems long; berries medium to large, firm, light red, often having a green tip when the body of the berry is fully ripe; dessert quality the best of any perpetual, musky.

FIG. 7.—Strawberry plants of the Duluth variety at Excelsior, Minn. At the left in the foreground is a plant bearing a large crop of fruit but no runners; at the right in the foreground is a plant bearing no fruit and making no runners; the plants in the background have made a few runners. (Photographed Sept. 26)

This variety is a cross between the Pan American and the Louis Gauthier, originated in 1905 by Harlow Rockhill, of Iowa, and introduced in 1912. It is better adapted to heavy-soil types than to sandy loams. Runner plants often begin to bear as soon as they start to root. The June crop is sometimes heavy and very good, and under favorable conditions the same plants will bear constantly from June until November. The variety is grown very little at the present time, but, because of its excellent quality, is liked by some growers, especially for hill culture in home gardens or for local markets.

Duluth (*Minnesota No. 1017*).—In Minnesota, as compared with the Progressive, this variety is more vigorous, not so good a runner maker, and fully as productive; the foliage is more susceptible to leaf-spot diseases; the berries are larger, more globular, fully as firm, slightly darker red in color, and of as good dessert quality.

The variety is a cross between the Pan American and the Dunlap, and originated at the Minnesota Experiment Station Fruit-Breeding Farm in 1910. At certain places in Minnesota it has been reported to be more productive than the Progressive, while in other sections it has been so badly affected by leaf-spot diseases that it has been discarded. It is not recommended at present for general planting.

Mastodon.—A recently introduced variety with large fruit, reported promising in Michigan.

Pan American.—Plants vigorous, but they do not make many new runners; foliage susceptible to mildew; fruit stems short and well protected by the leaves from rain and frost; berries medium in size, dessert quality fair.

The first plants of this variety were found by Samuel Cooper, of New York, in a field of Bismarck, and it is supposed to be a sport of that variety. Only a small crop is borne in the autumn. It is grown very little at present and is known chiefly as a parent of most of the everbearers.

Progressive (*Nevastop*).—A cross between the Dunlap and the Pan American made in 1908 by Harlow Rockhill, Iowa, who first sent it out for trial in 1911. It is described by him as follows:

"The plant is medium sized, closely resembling the Dunlap; foliage strong and healthy, has a good root system, and makes about as many plants as Dunlap. Spring-set plants fruit the same year as set out. New plants generally fruit in a short time after taking root. Blossoms are strongly staminate and very resistant to cold. Blossoms and fruit are well protected by foliage. Fruit is of good medium size with slight neck. Color deep red inside and out, quite firm, quality rich and sweet."

This is a good characterization of the Progressive. The plants are the most vigorous of all of the everbearers now in the trade, and are, so far as observed, the hardiest variety of strawberry now grown in this country, enduring the extreme climate of the upper Mississippi Valley remarkably well. The foliage is very resistant to leaf-spot diseases. Both the plant and the fruit closely resemble the Dunlap. The spring crop begins to ripen very early—8 to 10 days earlier than Dunlap, and usually earlier than Excelsior, Michel, and other early sorts. It is adapted to sections where the Dunlap succeeds and should be planted on fertile soils.

Superb.—Plants vigorous, runners long and do not form a thick mat of plants except on moist rich soil; foliage very resistant to leaf-spot diseases; berries medium to large, globose conic, fairly firm, color variable, often light red until very ripe, when they turn dark; mild subacid; dessert quality good in the summer, but lacking in the autumn.

The Superb is a cross between the Sherman (a seedling of the Pan American) and a seedling resulting from a cross between the Autumn and the Cooper. It was originated in 1908 by Samuel Cooper and introduced in 1911. It is especially adapted to poor soils, provided there is plenty of moisture. Runner plants rarely bear fruit the first year. The berries resemble the Chesapeake in appearance. The first crop in parts of Michigan and in certain other States is reported equal to that of some of the ordinary varieties. It is grown more than any other perpetual except the Progressive, but probably should be replaced by the Peerless in most sections.

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